UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/886,388	07/01/97	SANDHU G	MI22-713

021567 MM22/0622
WELLS ST JOHN ROBERTS GREGORY AND MATKIN
SUITE 1300
601 W FIRST AVENUE
SPOKANE WA 99201-3828

EXAMINER	
CRANE,S	
ART UNIT	**PAPER NUMBER**
2811	12

DATE MAILED: 06/22/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/886,388	Sandhu et al.
Examiner	**Group Art Unit**
Sara W. Crane	2811

☒ Responsive to communication(s) filed on *4/9/99 (CPA filing)* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *44-45* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *44-45* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *10*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

The drawings submitted 11/13/98 have been approved by the draftsman.

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 44-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 44, the "lateral spacing" between stacked capacitors is not clear. A stacked capacitor has two capacitor plates, with a dielectric between the two plates. The "lateral spacing" could refer to the spacing between the lower capacitor plates, but because the upper capacitor plate typically covers all of the capacitors on the chip, there is not strictly speaking any lateral spacing at all between the *capacitors*, because the upper capacitor plate is shared by all of the capacitors on the chip.

In claim 44, "the minimum photolithographic feature dimension with which the capacitors are fabricated" is not clear, because the phrase apparently refers to a process of making, i.e., a process utilizing photolithography, but the reference to photolithography has no antecedent. The claim thus encompasses capacitors made by any method at all, and yet the "lateral spacing" dimension is defined only for those capacitors made using a photolithographic processing step.

This is contradictory and confusing. (What if the capacitor is made using, for example, e-beam lithography? Is the "minimum photolithographic feature" now zero?)

Also, the "minimum photolithographic feature dimension with which the capacitors are fabricated" is indefinite, because one cannot determine what this dimension might be without reference to a process of making, and no process of making is specified. The claim language apparently attempts to make reference to any photolithographic processes that might be used to make the stacked capacitor, including processes that have not yet been invented. Processes change over time, and the "minimum photolithographic feature dimension" that one can obtain generally becomes smaller as time goes by, although one cannot know how much smaller because one cannot know what precisely what improvements to the technology will be made in the future. Recitation of a "minimum photolithographic feature" is therefore indefinite on its face, one reason being that one cannot claim a feature size which varies over time.

The "minimum photolithographic feature dimension with which the capacitors are fabricated" is indefinite for the further reason that one cannot determine what part of the capacitor has this dimension. Is this the width of the lower capacitor plate? Is the interconnect filling the via between the lower capacitor plate and the underlying source/drain region a part of the capacitor? Is the transistor part of the capacitor?

In claim 45, the "minimum photolithographic feature dimension with which the capacitors are fabricated" is unclear for the same reasons discussed above.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 44-45 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 44 and 45 each recite a dimension corresponding to "the minimum photolithographic feature dimension with which the capacitors are fabricated." Claim language in a patent is intended to describe structure that exists at a time when a patent might be enforced against an alleged infringer, i.e., in the future. The claims thus attempt to encompass photolithographic processes that would be used in the future. The specification does not disclose the photolithographic processes that will be used in the future, however, because one cannot know what these processes will be.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44-45, insofar as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Morihara et al. ("Disk-Shaped Stacked Capacitor Cell for 256 Mb Dynamic Random-Access Memory), cited by Applicant.

With respect to claim 44, the abstract teaches that the distance between adjacent storage node patterns is less than can be realized by lithographic resolution. This appears to fully anticipate the claim.

With respect to claim 45, the Morihara capacitors have, in cross-section as shown in figure 2, "laterally opposed fins interconnected with an projecting laterally from the stem," where the hollow "stem" would be the hollow cup-shaped part of the storage node. The "minimum width" of this hollow "stem" would be the thickness of the layer deposited between steps (a) and (b) in figure 2. This thickness is not determined photolithographically, and from the figures it is clear that this thickness is less that the photolithographic resolution of 0.2 to 0.25 μm as discussed with respect to figure 3.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (703) 308-4894.

The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Sara W. Crane
Examiner
Art Unit 2811